

What Is Claimed Is:

1. A complex pH electrode which has at least two ion-selective electrodes comprising a non-conductive support, a pair of electrode layers constituted of a silver layer and a silver halide layer and electrically insulated from each other, an electrolytic layer and an ion-selective membrane, which are laminated in this order, wherein at least one of the ion-selective electrode is a hydrogen ion-selective electrode, and which is provided with a non-conductive member having an aperture for supplying a test liquid and an aperture for supplying a reference liquid, a first delivering member for delivering said supplied test liquid to one of said ion-selective electrodes, a second delivering member for delivering said supplied reference liquid to the other of said ion-selective electrodes and a bridging member for electrically connecting said test liquid and said reference liquid;

wherein the hydrogen ion-selective membrane is saturated with carbon dioxide gas.

2. The complex pH electrode according to claim 1, wherein the hydrogen ion-selective membrane is a membrane composed of tri-n-dodecyl amine (TDDA), triethylhexyl trimellitate, potassium tetrakis (p-chlorophenyl borate) and vinyl chloride-vinyl acetate copolymer.

3. A method for measuring pH of a test liquid, which comprises steps of:

supplying the test liquid and a reference liquid to the complex pH electrode according to claim 1, and

measuring an electric potential difference between electrodes.

4. The method according to claim 3, wherein the reference liquid contains bicarbonate ions having the concentration substantially equal to that of the test liquid.

5. The method according to claim 3, wherein the concentration of bicarbonate ions in the reference liquid is 20 to 40 mM.

6. A kit of a complex pH electrode which comprises;

a complex pH electrode which has at least two ion-selective electrodes comprising a non-conductive support, a pair of electrode layers constituted of a silver layer and a silver halide layer and electrically insulated from each other, an electrolytic layer and an ion-selective layer, which are laminated in this order, wherein at least one of the ion-selective electrode is a hydrogen ion-selective electrode, and which is provided with a non-conductive member having an aperture for supplying a test liquid and an aperture for supplying a reference liquid, a first delivering member for delivering said supplied test liquid to one of said ion-selective electrodes, a second delivering member for delivering said supplied reference liquid to the other of said ion-selective electrodes and a bridging member for electrically connecting said test liquid and said reference liquid; and

a reference liquid containing bicarbonate ions having the concentration substantially equal to that of the test liquid.

7. The complex pH electrode kit according to claim 6, wherein the hydrogen ion-selective membrane of the complex pH electrode is saturated with carbon dioxide gas.

8. The complex pH electrode kit according to claim 6, wherein the concentration of bicarbonate ions in the reference liquid is 20 to 40 mM.

9. A method for measuring pH of a test liquid which comprises steps of:

supplying the test liquid and a reference liquid to the complex pH electrode by using the complex pH electrode kit according to any of claims 6 to 8; and

measuring the electric potential difference between electrodes.

10. A pH electrode for analyzing a hydrogen ion, which comprises a non-conductive support, a pair of electrode layers constituted of a silver layer and a silver halide layer and electrically insulated from each other, an electrolytic layer and an hydrogen ion-selective membrane, which are laminated in this order, and which is provided thereon with a first

non-conductive member having an aperture for supplying a test liquid in correspondence with one of said electrode layers, a second non-conductive member having an aperture for supplying a reference liquid in correspondence with the other of said electrode layers and a bridging member for electrically connecting said test liquid and said reference liquid at apertures:

wherein the hydrogen ion-selective membrane is saturated with carbon dioxide gas.

11. The pH electrode according to claim 10, wherein the hydrogen ion-selective membrane is a membrane composed of tri-n-dodecyl amine (TDDA), triethylhexyl trimellitate, potassium tetrakis (p-chlorophenyl borate) and vinyl chloride-vinyl acetate copolymer.

12. A method for measuring pH of a test liquid, which comprises, steps of:

supplying the test liquid and a reference liquid to the pH electrode according to claim 10 or 11; and

measuring the electric potential difference between electrodes.

13. The method according to claim 12, wherein the reference liquid contains bicarbonate ions having the concentration substantially equal to that of the test liquid.

14. The method according to claim 12, wherein the concentration of bicarbonate ions in the reference liquid is 20 to 40 mM.